

## LIP TATTOO DARKENING AFTER Q-SWITCHED LASER HAIR REMOVAL FOLLOWED BY SIGNIFICANT SPONTANEOUS IMPROVEMENT

### Dear Editor:

Q-switched (QS) lasers are known to cause permanent darkening of some tattoos including those that are red, pink, or skin-colored.<sup>1</sup> This is especially true for cosmetic lip and eyebrow tattoos.<sup>2</sup> Hair removal using QS lasers is popular in our country as it is relatively quick and painless as compared to conventional laser hair removal (LHR) using long-pulsed mode. We report a case of lip tattoo darkening after QS LHR that spontaneously improved afterwards.

A 30-year-old female was being evaluated at our dermatology clinic for generalized vitiligo that she had for more than 10 years. She was receiving treatment with narrowband UVB and tacrolimus 0.1% ointment. During one of her follow up visits, she had prominent darkening of her lips (Figure 1). Six years ago, she had a cosmetic pink lip tattoo. A few weeks prior to her visit to our clinic, she underwent Q-switched 1064 nm LHR around the mouth (Spectra, Lutronic, Korea). Darkening of the lips developed within two days. After approximately two months, the darkening significantly improved without any treatment (Figure 1).

Paradoxical darkening of red or pink tattoos after QS laser usually occurs due to reduction of ferric oxide to ferrous oxide.<sup>2</sup> This complication is thought to be irreversible. However; it can be corrected with either continued QS laser treatment or ablative laser resurfacing.<sup>2,3</sup> Our case has two interesting points. First, paradoxical darkening occurred after an unconventional use of QS laser, which is hair removal. Second, the darkening resolved spontaneously which was never reported to the best of our knowledge.

The spontaneous resolution could be due to the initial fragmentation of the tattoo particles by QS laser treatment. The fragmented darkened tattoo particles were then possibly eliminated by macrophages or via lymphatics over several months.<sup>4</sup> Furthermore, previously reported improvement of paradoxical darkening with continued QS laser treatment might have been



**FIGURE 1.** Darkening of the borders of the red lip tattoo after Q-switched laser hair removal (left). Significant spontaneous improvement of the darkened areas after approximately two months (right). Note: patient has lip vitiligo that is showing signs of repigmentation with narrowband UVB phototherapy.

due to both time and additional fragmentation of tattoo particles in each session. It is not clear if tacrolimus ointment application has played a role in the observed improvement in our patient. In fact, we have seen a few patients in the past in whom paradoxical darkening spontaneously improved without tacrolimus application.

We recommend that all patients must be asked about having done a cosmetic lip and/or eyebrow tattoo before undergoing QS LHR around the mouth or for the eyebrows. Some cases of paradoxical darkening might significantly improve without further treatment. This might help in reassuring patients who develop this complication, however; more studies are required to confirm this finding.

With regard,

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